

Application No.: 09/742,686

Atty Docket: 3COM 3354-1

In the Claims:

The following is a list of claims pending in this application and their current status. This list replaces all prior versions and listings.

1. (Currently amended) A method of determining an optimum bit load per subchannel in a multicarrier system with forward error correction, comprising:

computing one or more values of a number of bit positions b of a quadrature-amplitude-modulation symbol, based on one or more values of a number of symbols in ~~[[the]]~~ an information field K , and one or more values of a number of control code symbols per discrete-multi-tone symbol z , to provide one or more determined values of b , in accordance with the following relationship:

$$1 - \left(1 - W(s, z, K) \epsilon_s^{\frac{1}{0.5 \cdot sz + 1}} \right)^{1/\alpha}$$

$$= \omega(b(\gamma_{eff}, s, z)) \left(1 - 2^{-b(\gamma_{eff}, s, z)/2} \right) \operatorname{erfc} \left(\sqrt{3 \cdot 10^{\gamma_{eff}/10}} / \left(2^{b(\gamma_{eff}, s, z)/2} - 2 \right) \right),$$

$$\times \left[2 - \left(1 - 2^{-b(\gamma_{eff}, s, z)/2} \right) \operatorname{erfc} \left(\sqrt{3 \cdot 10^{\gamma_{eff}/10}} / \left(2^{b(\gamma_{eff}, s, z)/2} - 2 \right) \right) \right]$$

$$W(s, z, K) = \left[\frac{\Gamma(K + \rho s + sz)}{\Gamma(K + \rho s + 0.5 \cdot sz) \Gamma(0.5 \cdot sz + 1)} \right]^{-1/(0.5 \cdot sz + 1)}$$

$$\omega(b) = \frac{4}{2b + 3},$$

$$\Gamma(x) = (x-1)!, \text{ and}$$

$$b(\gamma_{eff}, s, z) = \frac{\alpha}{sn_{eff}} (K + \rho s + zs)$$

s represents a number of discrete-multi-tone symbols in a frame, ϵ_s represents a symbol error rate, α represents the size of a code symbol, ρ represents a framing mode index, $\alpha(b)$ represents an average fraction of erroneous bits in an erroneous b -sized quadrature-

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